

AMENDMENTS TO THE CLAIMS

Claims 1-4 (Canceled)

5. (Currently Amended) An optical transmitter comprising:

a first encoder that generates a differentially encoded signal from a data signal, the differentially encoded signal comprising a positive phase differential signal and a reverse phase differential signal, the reverse phase differential signal being an inverted version of the positive phase differential signal;

a second encoder that generates an electric RZ (return-to-zero) differential signal as an RZ signal in an electric area from the differentially encoded signal, the electric RZ differential signal comprising a positive phase RZ signal and reverse phase RZ signal which are generated by the second encoder by synchronizing the positive phase and the reverse phase differential signals with a clock signal; and

a Mach-Zehnder interferometer type intensity modulator that generates an optical RZ-DPSK (differential phase shift keying) signal as an RZ signal in an optical area based on the electric RZ differential signal.

6. (Currently Amended) The optical transmitter according to claim 5, wherein

the optical RZ-DPSK signal is modulated by a differential phase of $(0, \pi)$. ~~π~~

7. (Canceled)

8. (Currently Amended) The optical transmitter according to claim 5, 7, wherein

the positive phase differential signal is an inverted output of a circuit which performs an exclusive OR of the data signal and a one-bit delayed version of the inverted output of the circuit, from the own apparatus and the data signal, and

the reversed phase differential signal is a non-inverted output of the circuit performing the exclusive OR.

9. (New) A method for optical transmission, comprising:

generating a differentially encoded signal from a data signal, the differentially encoded signal comprising a positive phase differential signal and a reverse phase differential signal, the reverse phase differential signal being an inverted version of the positive phase differential signal;

generating an electric RZ (return-to-zero) differential signal as an RZ signal in an electric area from the differentially encoded signal, the electric RZ differential signal comprising a positive phase RZ signal and a reverse phase RZ signal which are generated by synchronizing the positive phase differential signal and the reverse phase differential signal, respectively, with a clock signal;

inputting the electric RZ differential signal to a Mach-Zehnder interferometer type intensity modulator;

utilizing the Mach-Zehnder interferometer type intensity modulator to modulate the output of a light source based on the electric RZ differential signal to generate an optical RZ-DPSK (differential phase shift keying) signal as an RZ signal in an optical area; and

transmitting the RZ-DPSK signal via an optical transmission line.

10. (New) The method according to claim 9, wherein

the optical RZ-DPSK signal is modulated by a differential phase of $(0, \pi)$.

11. (New) The method according to claim 9, wherein

the positive phase differential signal is generated by inverting an output of a circuit which performs an exclusive OR of the data signal and a one-bit delayed version of the inverted output of the circuit, and

the reversed phase differential signal is obtained as a non-inverted output of the circuit performing the exclusive OR.